

Prospects for PORTS™

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PROJECT DESCRIPTION AND PROGRESS TO DATE

The Physical Oceanographic Real-Time System (PORTS™) is a program of NOS' Center for Operational Oceanographic Products & Services (CO-OPS) that supports safe and efficient navigation by providing ship masters and pilots with accurate real-time information required to avoid groundings and collisions, while at the same time maximizing waterway throughput. Beginning in 1991 with the installation of a prototype in Tampa Bay, PORTS™ has developed into a national network. PORTS™ comes in a variety of sizes and configurations, each specifically designed to meet user requirements and to take into account geographic and hydrologic differences between waterways. Today in addition to Tampa Bay, New York/New Jersey Harbor, San Francisco Bay, Houston/Galveston Bay, Narragansett Bay, Los Angeles-Long Beach Harbor, Soo Locks, and Chesapeake Bay are home to full scale operational PORTS™. Smaller installations are located at Nikiski and Anchorage, AK; Seattle and Tacoma, WA; and New Haven CT.

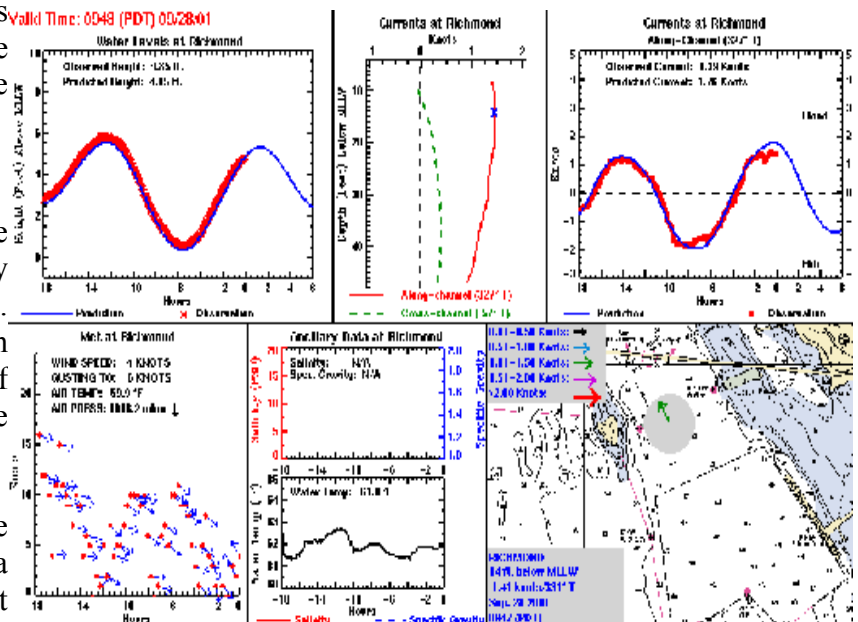
PORTS™ is a partnership based on extensive collaboration between NOS and local maritime communities to identify and satisfy user needs. Pursuant to congressional direction, CO-OPS oversees the implementation, operation and maintenance of these systems that are funded by local user organizations.

The data quality of all PORTS™ data is maintained by CO-OPS through the Continuous Operational Real-Time Monitoring System (CORMS). CORMS is a 24-hour, 7-day staffed quality control operation to monitor all PORTS™ data as well as data from NOS National Water Level Observation Program stations. The automated system flags questionable data; personnel then intervene and stop dissemination of the questionable data until the issue is resolved.

PRODUCTS

Like so many other technologies, the World Wide Web is the primary distribution mode for PORTS™ products. Users can view real-time information (updated every 6 minutes) in a variety of graphic and text forms. Archived data are also available via the web.

The majority of full PORTS sites have opted to include data distribution via phone. Mariners can hear the most recent



data value by calling the PORTS voice response system and selecting from a menu. NOS uses customer feedback to refine and enhance the PORTS product suite.

FUTURE PLANS

Two new major PORTS™ will be coming on-line in FY02. The Delaware River Port Authority, the Maritime Exchange for Delaware River and Bay, and the US Army Corps of Engineers have teamed up with NOS to install current meters, tide gauges, and meteorological equipment spanning the navigational areas from the mouth of the Delaware Bay to Newbold Island nearly 130 miles up river. The Maryland Port Administration is funding the installation of an equally extensive suite of oceanographic instrumentation that will extend from the C&D Canal throughout the Chesapeake Bay.

Numerous other major port complexes from Boston, MA to Prince William Sound have expressed interest in PORTS™. Preliminary user requirements have been gathered and documented for Hampton Roads, VA; Charleston, NC; Jacksonville, FL; the Lower Mississippi River; and Puget Sound. Each of these maritime communities are working to refine their needs and to identify potential funding sources for PORTS™.

The rapid expansion of PORTS™ has placed an additional burden on the CORMS operators. This issue is being addressed by state-of-the-art artificial intelligence software in the development and implementation of CORMS II - a rule and case-based reasoning decision support system which will complement the existing CORMS and automate some of the decisions presently being made by the CORMS operators.

CO-OPS initiated the Ocean Systems Test & Evaluation Program (OSTEP) in 2001 to facilitate the implementation of new measurement systems and improve the operations of existing sensors/systems. OSTEP provides a non-operational setting in which to test and evaluate oceanographic and marine meteorological sensors and systems. Test data are subject to quality assurance to a level required for NOS to accept legal liability for observations and derived navigation safety products and services. Sensors/systems presently under evaluation include:

- ! forward and back scattering visibility(fog) sensors,
- ! microwave air gap (bridge clearance) sensors,
- ! conductivity/salinity/specific gravity sensors,
- ! side-looking Acoustic Doppler Current Profilers (ADCP),
- ! buoy-mounted downward-looking ADCP
- ! new generation data collection platforms using Windows CE operating system
- ! HF radar surface current mapping system
- ! wave observations from ADCPs
- ! wave observations from a buoy-mounted accelerometer-based system

NOS views the application of predictive models to be a natural extension of real-time information. The effect of meteorological forcing significantly limits the usefulness of traditional Tide and Tidal Current Tables in many estuaries. The Chesapeake Bay Operational Forecast System (CBOFS) is the first such predictive model to be implemented. CBOFS is a hydrodynamic estuarine model which provides forecasts of water level 24 hours into the future by using tidal forcing, wind fields and coastal water levels. Forecasting systems are under development within NOS for New York/ New Jersey Harbor and Galveston Bay.

<http://co-ops.nos.noaa.gov/CBOFS/index.shtml>

Recognizing the import role that outreach and training play in any successful program, NOS plans to initiate a program named “Professional Mariner Training”. This course, envisioned to be a multi-day workshop, would provide hands-on instruction on NOS navigational products, specifically the understanding and interpretation of charts (paper, raster, vector), the Coast Pilot, tides, currents, and PORTS™.